

Application No.: 10/646236

Docket No.: NGW-010

AMENDMENTS TO THE SPECIFICATION

On page 3, please replace the paragraph starting at line 8 with the following paragraph:

In order to accomplish the object above, the following means are adopted. According to a first aspect of the invention, there is provided a fuel cell vehicle driven by generated electric power of a fuel cell (for example, a fuel cell 3 in an embodiment), comprising a fuel cell box disposed under a floor of the fuel cell vehicle (for example, a fuel cell box 4 in the embodiment) for storing the fuel cell, a deformation detecting sensor (for example, G sensors 6, 6' in the embodiment) for detecting a deformation of a vehicle body sideward of the fuel cell box, and a protection device (for example, a shut-off valve 15 in the embodiment) for implementing a predetermined protecting operation of the fuel cell when the deformation detecting sensor detects a predetermined amount of deformation of the vehicle body.

On page 4, please replace the paragraph starting at line 6 with the following paragraph:

According to a second aspect of the invention, there is provided a fuel cell vehicle wherein the deformation detecting sensor comprises a plurality of acceleration sensors (for example, G sensors 5, 6, 6' in the embodiment), and wherein the vehicle body deformation amount is obtained based on a difference in travel of a vehicle body calculated from accelerations detected by the respective acceleration sensors.

On page 5, please replace the paragraph starting at line 19 with the following paragraph:

As shown in Fig. 1, a rear floor 2 is connected to the rear of a front floor (floor) 1 of a fuel cell vehicle in such a manner as to rise therefrom. A fuel cell box 4 covers a proton-exchange membrane fuel cell 3 and unitized peripheral equipment thereof. The fuel cell box 4 is disposed underneath the front floor 1. A G sensor (as a deformation detecting sensor or an acceleration sensor) 5 is disposed at a location above a front portion of the fuel cell box 4. G sensors (as deformation detecting sensors or acceleration sensors) 6, 6' are disposed at locations above sides of the fuel cell box 4. Here, the G sensor 5 disposed forward of the fuel cell 3 is an existing acceleration sensor for detecting behaviors of the vehicle. The G sensors 6, 6' disposed at the locations sideward of the fuel cell box 4 are sensors that are additionally disposed according to the invention.

On page 6, please replace the paragraph starting at line 24 with the following paragraph:

As shown in Fig. 4, the fuel cell 3 generates electricity through a reaction of hydrogen gas (H₂) supplied from a hydrogen tank 11 via a supply side piping 12 with oxygen in the air which is supplied from a compressor 13 such as a super charger (S/C) via a supply side piping 14. Then, the fuel cell 3 supplies generated electric power to a driving motor, not shown, so as to drive the fuel cell vehicle. A shut-off valve 15 is interposed at a position along the supply side piping 12 of the hydrogen tank 11, so that hydrogen gas flowing from the hydrogen tank 11 through the supply side piping 12 can be shut off when stop of the operation of the fuel cell 3 is desired. Then, this shut-off valve 15 is connected to a controller (ECU) 16, and the G sensors 5, 6, 6' are connected to this controller 16. Note that reference numerals 12', 14' denote hydrogen and oxygen discharge side pipings, respectively.

Application No.: 10/646236

Docket No.: NGW-010

On page 8, please replace the paragraph starting at line 14 with the following paragraph:

According to the embodiment, when the vehicle collides sideways, the respective sensors 5, 6, 6 detect accelerations at the moment of the collision. In the event that the accelerations so detected are larger than a predetermined value, since an impact generated by the collision is large, a countermeasures can be implemented by stopping the operation of the fuel cell 3 immediately after the collision. Even in the event that the accelerations so detected are smaller than the predetermined value, for example, in the event that the travel of a member on the side of the vehicle body is large, an approach of the member of the vehicle body toward the fuel cell 3 or the fuel cell box 4 can be detected to thereby start to take a protecting action.

On page 9, please replace the paragraph starting at line 24 with the following paragraph:

Namely, when the accelerations detected by the respective G sensors 5, 6, 6 are integrated by time twice to obtain travels at the locations where the G sensors are attached, for example, an inward travel of the left side sill 90 can be obtained from a difference in travels at the respective locations. Therefore, in the event that the travel so obtained equals to a distance between the side sill 90 and the side wall of the fuel cell box 4, the fuel cell 3 is shifted to take the predetermined protecting action, thereby making it possible to prevent a damage to the fuel cell 3.

On page 10, please replace the paragraph starting at line 18 with the following paragraph:

As a result, even in the event that the member of the vehicle body such as the side sill 90 (100) is deformed to thereby deform the fuel cell box 4 when the vehicle collides sideways, the protecting action such as stopping the operation of the fuel cell 3 can be implemented by the G sensors 5, 6, 6 before the side sill 90 (100) reaches the fuel cell box 4. Furthermore, even in the event that a collision which is so small that no large impact can be detected occurs, the fuel cell box 4 is prevented from being deformed by the deformation of the member of the vehicle body, thereby making it possible to protect the fuel cell 3. Consequently, troublesome operations can be eliminated which would otherwise have to occur frequently when all impacts including small collisions like this are made to be detected by the G sensors 5, 6, 6 so that the operation of the fuel cell 3 is stopped every time such impacts are detected, and the fuel cell 3 can be shifted to take the predetermined protecting action in an ensured fashion. In addition, a drawback can be eliminated that the vehicle weight is increased by increasing the rigidity of the fuel cell box 4 more than required.

On page 11, please replace the paragraph starting at line 15 with the following paragraph:

In addition, since only the G sensors 6, 6 are additionally provided at the sides of the vehicle body while the existing G sensor 5 is used effectively for this purpose, the required countermeasures can be provided at low costs.

On page 11, please replace the paragraph starting at line 20 with the following paragraph:

Note that the invention is not limited to the embodiment. While the invention has been described with respect to the case where the three G sensors are used, for example, stroke

Application No.: 10/646236

Docket No.: NGW-010

sensors may be used instead of the G sensors 6,6 provided at the sides of the vehicle body to directly measure traveling strokes (travels) of the side sills 90, 100 or inner surfaces of the inside sills 9, 10. According to this construction, travels of the members of the vehicle body can be detected with greater accuracy. In addition, the invention can also be applied to a fuel cell vehicle which installs therein a fuel cell other than the proton-exchange membrane fuel cell provided that the fuel cell can be equipped on board.